IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Patent Application of:	)	
Guojun Zhou	)	
	)	
Serial No.: 09/685,419	)	Art Unit: 2654
Filed: October 10, 2000	)	Examiner: Abul K. Azad
For: Language Independent	)	
Voice-based Search System	)	

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPEAL BRIEF
IN SUPPORT OF APPELLANT'S APPEAL
TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Sir:

Applicant (hereafter "Appellant") hereby submits this Brief in support of his Appeal from a final decision by the Examiner in the above-captioned case. Appellant respectfully requests consideration of this Appeal by the Board of Patent Appeals and Interferences for allowance of the claims in the above-captioned patent application.

An oral hearing is not desired.

I. REAL PARTY IN INTEREST

The invention is assigned to Intel Corporation of 2200 Mission College Boulevard, Santa Clara, California 95052.

II. RELATED APPEALS AND INTERFERENCES

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision.

III. STATUS OF THE CLAIMS

Claims 1, 3, 5, 7-13, 15, 17, 19-27, 29-30, 32-33, 35 and 39-42 are pending in the above-referenced patent application. Claims 1, 3, 5, 7-13, 15, 17, 19-27, 29-30, 32-33, 35 and 39-42 were rejected in the Final Office Action mailed on November 24, 2004. Claims 1, 3, 5, 7-13, 15, 17, 19-27, 29-30, 32-33, 35 and 39-42 are the subject of this appeal.

IV. STATUS OF AMENDMENTS

An amendment was filed on August 09, 2004 and was considered by the Examiner prior to issuing the Final Office Action.

A copy of all claims on appeal (claims 1, 3, 5, 7-13, 15, 17, 19-27, 29-30, 32-33, 35 and 39-42) is attached hereto as Appendix A.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present application discloses a method and apparatus for a language independent, voice-based Internet or intranet search system. Techniques disclosed in the present application may be used to enrich the current Internet or intranet search framework by allowing users to search for desired information via their own native spoken languages. In one embodiment, the search system may accept voice input data from a user spoken in a conversational manner, automatically identify the language spoken by the user, recognize the speech in the voice input data, and conduct the desired search using the speech as input data for a search query to a search engine. To make the language independent voice-based search system even more powerful, several features may also be included in the system. Natural language processing (NLP) may be applied to extract the search terms from the naturally spoken query so that users do not have to speak the search terms exactly (thus supporting conversational speech). Machine translation may be utilized to translate search terms as well as search results across multiple languages so that the search space may be substantially expanded. Automatic summarization techniques may be used to summarize the search results if the results are not well organized or are not presented in a user-preferred way. Natural language generation and text to speech (TTS) techniques may be employed to present the search results back to the user orally in the user's native spoken language. The universal voice search concept of the present invention, once integrated with an Internet or intranet search engine, becomes a powerful tool for people speaking different languages to make use of information available on the Internet or an intranet in the most convenient way. This system may

promote increased Internet usage among non-English speaking people by making search engines or other web sites easier to use.

Particularly, the present application discloses a method of interfacing to a system, as claimed in independent claim 1 and illustrated in Figure 2. At block 100, speech input may be received from a user and converted into a digital representation. At block 102, the digitized speech may be analyzed to identify the language used by the user. At block 104, the speech may be converted into a first text according to the identified language by recognizing the user's speech in the speech input data. At block 106, keywords may be extracted from the first text by parsing the first text. At block 108, the keywords may be translated into a plurality of automatically selected languages other than the identified language. At block 110, the keywords in a plurality of languages may be used as search terms for queries to one or more search engines. At block 112, the search results in a plurality of languages from the one or more search engines may be received and translated into the language used by the user. Next, at block 114, the search results may be summarized (if necessary). At block 116, the (summarized) search results may be generated in a second text form that represents natural language constructs with a prosodic pattern for the user's language. At block 118, the text may be converted to speech using a text to speech module and rendered in an audible manner for the user. See page 10, line 30 to page 11, line 14 of the specification.

Additionally, the present application discloses a language independent speech based user interface system, as claimed in independent claim 25 and shown in Figure 1. The system comprises a language identifier (22) to receive

speech input data from input facility (10) (e.g., voice input (16)), and to identify the language spoken by a user (see page 6, line 4 to page 7, line 15 of the specification). Once the language that the user is speaking is identified, the input speech data as well as a language identifier may be passed to the speech recognition module (23) which recognizes what words have been said, and translates the information into a first text (see page 7, lines 16-28 of the specification). Moreover, the system comprises a natural language processing module (26) to parse the first text to extract keywords and discard any unimportant words (e.g., filler words, repetitions, speech idioms, etc.) within the first text (see page 7, line 29 to page 8, line 16 of the specification).

Once the keywords have been extracted from the text, the keywords may be translated by machine translation module (28) into a plurality of supported languages. By translating the keywords into multiple languages and using the keywords as search terms, the search can be performed across documents in different languages, thereby significantly extending the search space used. The keywords may be automatically input as search terms in different languages (30) to a search engine (32). The search engine searches the Internet or a specified intranet and returns the search results in different languages (34). Depending on the search results, the results may be in a single language or multiple languages. If the search results are in multiple languages, machine translation module (28) may be used to translate the search results into the language used by the user. If the search results are in a single language that is not the user's language, the results

may be translated into the user's language. See page 8, line 17 to page 9, line 8 of the specification.

Furthermore, the system claimed in independent claim 25 comprises an automatic summarization module (36) to summarize the search results, if necessary; and a natural language generation module (36) to take the summarized search results in the user's language and generate naturally spoken forms of the results. The results may be modified to conform to readable sentences using a selected prosodic pattern so the results sound natural and grammatically correct when rendered to the user. See page 9, lines 9-27 of the specification.

The output of the natural language generation module may be passed to text to speech module (20) to convert the text into an audio format and render the audio data to the user. Alternatively, the text may be shown on a display 18 in the conventional manner. See page 9, line 28 to page 10, line 10 of the specification.

Regarding independent claim 13, it recites limitations similar to those recited in independent claim 1. In addition to reciting limitations similar to those recited in independent claim 25, independent claim 33 recites at least one search engine to use the keywords as a search term and to return search results, which is described when summarizing claim 25 above.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1, 3, 5, 7-10, 12, 13, 15, 17, 19-22, 24-27, 29-30, 33, 35, and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Junqua, et al. (US

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6,324,512) (hereinafter Junqua), in view of Cohen, et al. (EP 1 014 277) (hereinafter Cohen), and further in view of Nosohara (EP 0 838 765) (hereinafter Nosohara). The Examiner did not include claim 24 in this rejection, but the Appellant believes that claim 24 should be included here because it recites limitations similar to those recited in claim 12.

Claims 11, 23, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Junqua in view of Cohen as applied to claims 9, 21, and 29 above, and further in view of well-known prior art (MPEP 2144.03).

VII. **ARGUMENT**

A. CLAIMS 1, 13, 25, 33

Independent claims 1, 13, 25, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Junqua in view of Cohen further in view of Nosohara.

The Examiner has not established a prima facie case of obviousness based on a combination of Junqua, Cohen, Nosohara, and the Examiner-asserted well-known art. First, to establish a prima facie case of obviousness, "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings." MPEP § 2143. The Examiner also recognizes this requirement. See the page 10, first full paragraph of the Final Office Action (citing *In re Fine* 837 F.2d 1071, 5 USPQ.2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ.2d 1941 (Fed. Cir. 1992)). This requirement was emphasized several times by the Federal Circuit. For example, in

In re Kotzab, 217 F.3d 1365, 55 U.S.P.Q.2d 1313 (Fed. Cir. 2000), the Federal Circuit clearly stated, "to establish obviousness based on a combination of the elements disclosed in the prior art, *there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the Applicant.*" (emphasis added). Here, the Appellant respectfully contends that Junqua, Cohen, and Nosohara provide no motivation toward a language independent voice-based search system as claimed that comprises all of the multiple features of language identification, speaker verification, speech recognition, natural language processing, automatic summarization, automatic translation, speech synthesis, and natural language generation.

As supported by the earlier submitted declaration from Dr. Yonghong Yan, who is an expert in the speech and natural language processing field, technologies in this field were previously not sophisticated enough to make possible a language independent voice-based search system, as described in the above-identified application (Dr. Yonghong Yan's declaration was submitted along with the Appellant's response to the Examiner's earlier non-final Office Action dated May 5, 2004, which resulted in the Final Office Action). Furthermore, prior to the date of invention the speed of computing systems was not high enough to make it possible for the claimed search system to work in real-time. This explains why in an earlier time frame Junqua limited its speech processing application to a very limited domain of an electronic program guide (EPG), where the search is conducted in a limited size database of specific terms, where no summarization, language

identification, translation, or language generation is necessary, a user is expected to speak in a predictable way, and responses to a user's requests are very simple. Throughout Junqua, there is no suggestion or motivation to expand its teaching to a complex application such as the claimed language independent voice-based Internet search engine because when Junqua's application was filed in Aug. 1999, adequate speech technologies and computing infrastructure were simply not there yet. Thus, Junqua could not have suggested (and does not suggest) the present claims. The teaching of Cohen is limited to language identification and the teaching of Nosohara is limited to text-based language translation. There is no motivation or suggestion based on Cohen or Nosohara to expand their limited teaching in a single area to a complex application as disclosed in the above-identified application, which includes technologies in several complicated areas such as speech recognition, speaker verification, speech synthesis, automatic summarization, and so on.

Additionally, one skilled in the art at the time of the invention would not have thought to combine these disparate elements as claimed because then exiting technologies in speech and natural language processing field were not sophisticated enough for complex tasks as disclosed in the above-identified application yet and real-time processing of such tasks was previously impossible. Thus, one skilled in the art (such as Dr. Yan) would not have thought the present claims were obvious at the time of invention.

In response to Appellant's above argument that there is no suggestion or motivation to combine the references, the Examiner simply states,

> In this case, the motivation or suggestion is found either in the reference or in the knowledge generally available to one or ordinary skill in the art to combine these references. Motivation or suggest are [sic] as follows:
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to automatically summarize the search results because one ordinary skill would readily recognize the convenience of providing [an] easy understandable summarized search results instead of providing whole content of search results.
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to identify a language spoken by user as Cohen teaches so that a [sic] language identification is achieved for enhancing the speech recognition process from a plurality of languages (Cohen, col. 2, lines 15-19).
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Nosohara's teaching so that optimum search result is obtained from a variety of databases of different languages using translation of the keyword and display the search results by translating back to original language for user convenience (col. 1, lines 8-15).

See page 10, first full paragraph through page 11, second full paragraph of the Final Office Action.

Here the Examiner's conclusive statements, without providing any support *in the references themselves or in the knowledge generally available to one of ordinary skill in the art*, at most show that it would have been obvious to the Examiner himself <u>in hindsight</u> after dissecting the elements claimed in the present application. According to CAFC case law, "particular factual findings regarding the suggestion, teaching, or motivation to combine serve a number of important purposes, including: (1) clear explication of the position adopted by the Examiner

and the Board; (2) identification of the factual disputes, if any, between the applicant and the Board; and (3) facilitation of review on appeal." *In re Dembiczak*, 175 F.3d 994, 999-1000 (Fed. Cir. 1999). Here, however, the Examiner failed to make any particular findings regarding the suggestion or motivation to combine the prior art references.

In fact, as argued by the Appellant above, Junqua only deals with a limited application and there is no suggestion or motivation in Junqua to combine its teachings with Cohen, Nosohara, and the Examiner-asserted well-known art. Junqua does not need the language identification capability because the application was targeted for a specific user using the language the user speaks. Junqua does not need the automatic summarization capability because Junqua's search results come from an EPG database where all information has already been very well organized in a succinct way. Additionally, Junqua does not need the language translation capability either because the user searches a database that is in his/her language. Furthermore, one of ordinary skill in the art, at the time of the present invention, had no motivation or desire to combine these complex technologies together because the technologies were not sophisticated yet and computing power was not ready for such a combination, as supported by the declaration from Dr. Yonghong Yan.

Because there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings at the time of

the invention, the first basic criterion for a prima facie case of obviousness has not been met. Accordingly, any assertion of obviousness based on the cited art and the Examiner-asserted "well known" art is in error. Independent claims 1, 13, 25, and 33 are thus allowable.

Second, to establish a prima facie case of obviousness, there must also be a reasonable expectation of success, which must be found in the prior art references. MPEP § 2143. As stated by Dr. Yan in the submitted declaration, technologies in speech and natural language processing field were previously not sophisticated enough to make possible a language independent voice-based search system, as described in the above-identified application. Furthermore, prior to the date of invention the speed of computing systems was not high enough to make it possible for the claimed search system to work in real-time. Each of Junqua, Cohen, and Nosohara is limited to a simple application which then-existing technologies could support. No possibility of success can be found, at the time of the invention, in either reference for combining them together to come up with a complex search system as claimed in the above-identified application.

In response to the Appellant's above argument that there was no reasonable expectation of success of the combination, the Examiner stated in the Final Office Action:

> [T]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to

those of ordinary skill in the art (*citing In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981)).

See page 12, first full paragraph of the Final Office Action.

The Examiner seems to miss the point. The quoted statement from *In re Keller* is used to rebut an argument that prior art devices are not physically combinable. MPEP 2145(III). However, the Appellant argued that there is no reasonable expectation of success of the combination at the time of the invention because of the lack of sophistication of technologies and the lack of computing power at the time of the invention, as supported by the declaration of Dr. Yonghong Yan. According to the MPEP, applicants may present evidence showing there was no reasonable expectation of success. MPEP 2143.02. When such evidence is provided, the Examiner is required to consider it. "The evidence that the combination was not viewed as technically feasible must be considered, for conventional wisdom that a combination should not be made is evidence of unobviousness." *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 958 (Fed. Cir. 1997). Here the Appellant did submit such evidence, which is the declaration of Dr. Yonghong Yan. However, the Examiner failed to consider this evidence. Therefore, the Examiner did not rebut the Appellant's argument that there was no reasonable expectation of success.

Because the Examiner has not met at least two basic criteria of a prima facie case of obviousness based on a combination of Junqua, Cohen, Nosohara, and the

Examiner's own asserted well-known art, the 35 U.S.C. § 103 rejections of claims 1, 13, 25 and 33 are without foundation. These claims are thus allowable.

Furthermore, any rejection based on a hindsight-based obviousness analysis is expressly forbidden by the case law:

> Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.... Combining prior art references *without evidence* of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight (emphasis added).

In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

The Examiner appears to be taking the Appellant's disclosure as a blueprint for piecing together in hindsight the prior art to attempt to defeat the patentability of the present invention. For example, in order to assert that there was suggestion or motivation to combine cited prior art references, the Examiner simply asserted that combining the automatic summarization element, the language identification element, and machine translation element to Junqua's teaching would be convenient for a user of Junqua's application (which is actually not true because a user of the Junqua application does not need these elements at all). Additionally, the Examiner failed to take the timeframe of the invention into account when making the rejections based on Junqua, Cohen, and Nosohara. "Measuring a

claimed invention against the standard established by section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field." *Id.* at 999. What may seem obvious to the Examiner today based on current computing technologies and the impermissible use of hindsight was <u>not</u> obvious to one skilled in the art at the time of invention, because researchers like Dr. Yan recognized the great difficulties involved at the time of the invention. The combination of the cited art does not provide any suggestion, either implicit or explicit, that such processing as is currently claimed (*taking the claim as a whole*) could be done, at the time of the invention. The cited art does not provide the requisite motivation or suggestion to combine the reference teachings. Accordingly, Appellant respectfully requests that the 35 U.S.C. 103(a) rejections of independent claims 1, 13, 25, and 33 based on a combination of Junqua, Cohen, and Nosohara be withdrawn due to the assertion of unobviousness by Dr. Yan in the accompanying declaration.

In response to Appellant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, the Examiner quoted from *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971), "[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a

reconstruction is proper." See page 13, first full paragraph of the Final Office Action. However, the Examiner misread *In re McLaughlin* because it expressly requires that the Examiner's judgment of obviousness take into account *"only knowledge* which was *within the level of ordinary skill in the art at the time the claimed invention was made* and does not include knowledge gleaned only from applicant's disclosure" (emphases added). *Id.* Here the declaration of Dr. Yan expressly shows that the Examiner's judgment of obviousness could not be reached by taking into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made because at the time of the invention, a person of ordinary skill would not have believed that the claimed language-independent search system was possible. Thus, the Examiner's judgment of obviousness must have been from impermissible hindsight without any finding in the references themselves that suggestion or motivation to combine those cited references, either explicit or implicit.

Because the Examiner did not present any factual findings supporting his conclusion that there is suggestion or motivation to combine Junqua, Cohen, Nosohara, and the Examiner asserted prior art to come up with the claimed invention in the present application, the subject matter claimed in claims 1, 13, 25, and 33 is not obvious over Junqua in view of Cohen further in view of Nosohara further in view of well-known prior art. Thus, a prima facie case of obviousness rejection of claims 1, 13, 25, and 33 under 35 U.S.C. § 103(a) over Junqua in view of Cohen further in view of Nosohara has not been made by the Examiner. Therefore, the 35 U.S.C. § 103(a) rejection of claims 1,

13, 25, and 33 must be withdrawn and these claims are patentable over Junqua in view of Cohen further in view of Nosohara.

B. CLAIMS , 3, 5, 7-12, 15, 17, 19-24, 26-27, 29-30, 32, 35, AND 39-42

Because independent claims 1, 13, 25, and 33 are patentable, all claims dependent therefrom are also patentable (e.g., existing claims 3, 5, 7-12, 15, 17, 19-24, 26-27, 29-30, 32, 35 and 39-42).

VIII. **CONCLUSION**

Appellant respectfully submits that all the pending claims in this patent application are patentable and request that the Board of Patent Appeals and Interferences overrule the Examiner and direct allowance of the rejected claims.

This brief is submitted along with payment of the appeal fee for one other than a small entity as specified in 37 C.F.R. § 1.17(c). Please charge any shortages and credit any overcharges to Deposit Account No. 02-2666.

Respectfully submitted,

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1   IX. APPENDIX A: CLAIMS ON APPEAL

2

3   1.   A method of interfacing to a system comprising:

4   receiving speech input data from a user;

5   identifying a language spoken by the user from the speech input data;

6   converting the speech input data into a first text in the identified language by

7 recognizing the user's speech in the speech input data based at least in part on the

8 language identifier;

9   parsing the first text to extract keywords;

10   automatically translating the keywords into a plurality of automatically

11 selected languages other than the identified language;

12   using the translated keywords as a command to an application;

13   receiving results to the command;

14   automatically summarizing the results;

15   converting the summarized results into a second text with a prosodic pattern

16 according to the language spoken by the user; and

17   rendering the second text for perception by the user.

1

1   2. (Cancelled)

1   3. The method of claim 1, wherein rendering comprises converting the

2 second text into speech and rendering the speech to the user.

1

1   4. (Cancelled)

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1   5. The method of claim 1, further comprising using the keywords as a

2 search query to at least one search engine, wherein the results comprise search

3 results from the at least one search engine operating on the search query.

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1   6. (Cancelled)

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1   7. The method of claim 1, further comprising automatically translating the

2 keywords into a plurality of automatically selected languages other than the

3 identified language and using the translated keywords as a search query to at least

4 one search engine in multiple languages, wherein the results comprise search

5 results in multiple languages from the at least one search engine operating on the

6 search query.

1

1   8.   The method of claim 7, further comprising automatically translating

2   search results in languages other than the language spoken by the user into the

3   language spoken by the user.

1

1   9.   The method of claim 1, wherein the application comprises a web

2   browser.

1

1   10.   The method of claim 9, wherein the web browser interfaces with at

2   least one search engine and the command comprises a search query.

1

1   11.   The method of claim 9, wherein the web browser interfaces with a

2   shopping web site and the command comprises at least one of a purchase order

3   and a request for product information.

1

1   12. The method of claim 1, wherein the speech comprises conversational

2   speech.

1

1   13. An article comprising: a storage medium having a plurality of machine

2   readable instructions, wherein when the instructions are executed by a processor,

3   the instructions provide for interfacing to a system by receiving speech input data

4   from a user, identifying a language spoken by the user from the speech input data,

5   converting the speech input data into a first text in the identified language by

6   recognizing the user's speech in the speech input data based at least in part on the

7   language identifier, parsing the first text to extract keywords, automatically

8   translating the keywords into a plurality of automatically selected languages other

9   than the identified language, using the translated keywords as a command to an

10   application, receiving results to the command, automatically summarizing the

11   results, converting the summarized results into a second text a prosodic pattern

12   according to the language spoken by the user, and rendering the second text for

13   perception by the user.

1

1   14. (Cancelled)

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1   15.   The article of claim 13, wherein instructions for rendering comprise

2   instructions for converting the second text into speech and rendering the speech to

3   the user.

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1   16. (Cancelled)

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1   17.   The article of claim 13, further comprising instructions for using the

2   keywords as a search query to at least one search engine, wherein the results

3   comprise search results from the at least one search engine operating on the search

4   query.

1

1   18. (Cancelled)

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1   19.   The article of claim 13, further comprising instructions for automatically

2   translating the keywords into a plurality of automatically selected languages other

3   than the identified language and using the translated keywords as a search query to

4   at least one search engine in multiple languages, wherein the results comprise

5   search results in multiple languages from the at least one search engine operating

6   on the search query.

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1   20.   The article of claim 19, further comprising instructions for

2   automatically translating search results in languages other than the language

3   spoken by the user into the language spoken by the user.

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1   21.   The article of claim 13, wherein the application comprises a web

2   browser.

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1   22.   The article of claim 21, wherein the web browser interfaces with at

2   least one search engine and the command comprises a search query.

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1   23.   The article of claim 21, wherein the web browser interfaces with a

2   shopping web site and the command comprises at least one of a purchase order

3   and a request for product information.

1

1   24.   The article of claim 13, wherein the speech comprises conversational

2   speech.

1

1   25.   A language independent speech based user interface system

2   comprising:

3   a language identifier to receive speech input data from a user and to identify

4   the language spoken by the user;

5   at least one speech recognizer to receive the speech input data and the

6   language identifier and to convert the speech input data into a first text based at

7   least in part on the language identifier;

8   at least one natural language processing module to parse the first text to

9   extract keywords;

10   at least one summarization module to automatically summarize the search

11   results from at least one search engine operating on the search query using the

12   extracted keywords;

13   at least one language translator to automatically translate the keywords into

14   a plurality of automatically selected languages other than the identified language for

15   use as a command to an application, and to translated results to the command in

16   languages other than a language spoken by the user to the language spoken by the

17   user; and

18   at least one natural language generator to convert the summarized results

19   into a second text with a prosodic pattern according to the language spoken by the

20   user.

1

1   26.   The system of claim 25, further comprising at least one text to speech

2   module to render the second text audibly to the user.

1

1   27.   The system of claim 25, further comprising at least one language

2   translator to automatically translate the keywords into a plurality of automatically

3   selected languages for use as a search query, and to automatically translate the

4   search results in languages other than the language spoken by the user into the

5   language spoken by the user prior to summarizing the translated results and

6   converting the summarized results into the second text in a natural language

7   format.

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1   28. (Cancelled)

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1   29.   The system of claim 25, wherein the system is coupled to a web

2   browser.

1

1   30.   The system of claim 29, wherein the web browser interfaces with at

2   least one search engine, the keyword comprises a search query, and the second

3   text comprises search results from the at least one search engine.

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1   31. (Cancelled)

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1   32.   The system of claim 29, wherein the web browser interfaces with a

2   shopping web site and the command comprises at least one of a purchase order

3   and a request for product information.

1

1   33. A language independent speech based search system comprising:

2   a language identifier to receive speech input data from a user and to identify

3   the language spoken by the user;

4   at least one speech recognizer to receive the speech input data and the

5   language identifier and to convert the speech input data into a first text based at

6   least in part on the language identifier;

7   at least one natural language processing module to parse the first text to

8   extract keywords;

9   at least one search engine to use the keywords as a search term and to

10 return search results;

11   at least one language translator to automatically translate the keyword into a

12 plurality of automatically selected languages prior to input to the at least one

13 search engine to search across multiple languages, and to automatically translate

14 search results in languages other than the language spoken by the user into the

15 language spoken by the user;

16   at least one automatic summarization module to automatically summarize the

17 translated search results;

18   at least one natural language generator to convert the summarized results

19 into a second text with a prosodic pattern according to the language spoken by the

20 user.

1

1   34. (Cancelled)

1

1   35.   The system of claim 33, further comprising at least one text to speech

2 module to render the second text audibly to the user.

1

1   36-38. (Cancelled)

1

1   39.   The method of claim 1, wherein the prosodic pattern is capable of

2 making the second text sound natural and grammatically correct.

1

1   40.   The article of claim 13, wherein the prosodic pattern makes the second

2 text sound natural and grammatically correct.

1

1   41.   The system of claim 25, wherein the prosodic pattern makes the

2 second text sound natural and grammatically correct.

1

42.   The system of claim 33, wherein the prosodic pattern makes the second text sound natural and grammatically correct.